THE TEXAS CLEAN RIVERS PROGRAM

BASIN HIGHLIGHTS REPORT
of the Canadian River Basin

RED RIVER AUTHORITY OF TEXAS

April 2000

Drought, a word that reverberates fear in mankind, is a fact of life in much of Texas, and is just another obstacle that the people of the Canadian River Basin must surmount. In the past nine years the Clean Rivers Program has successfully embedded the goals of the Clean Rivers Act, as envisioned by the 71st Legislature, into the environmental community. As the state weathers yet another drought, Red River Authority of Texas and the people of the Canadian River Basin will triumph over this adversity and persevere with the goals of the CRP.

About the Basin

The Canadian River Basin encompasses the majority of 15 counties in the Texas Panhandle. With its beginnings in northeastern New Mexico, the Canadian River crosses the Panhandle covering a drainage area of 12,616 square miles, eventually flowing into the Mississippi. Contrasting elevations from 9,000 feet to 2,870 feet and average rainfall amounts of 15 to 25 inches aid in the creation of this distinctive area. The basin contains three major reservoirs and four major aquifers that provide water uses to more than a quarter of a million people who live and work in the Canadian River Basin of Texas.

Clean Rivers Program Goals

In an effort to facilitate improved planning, monitoring, geographical analysis and dissemination of information, the Canadian River Basin was divided into five sub-basins or reaches, then further divided into subwatersheds. The following goals are targeted to comprehensively assess the basin and implement positive procedures to conserve, reclaim and protect the water resources of the Canadian River Basin:

 # 1 - Identify Water Quality Conditions

Selected water quality monitoring sites have been designated for collection of chemical, physical and biological data. Collected samples are analyzed in the field, at the Authority's Environmental Laboratory or at a contract lab. Within days of collection, the results of the analyses are entered into the data repository, which currently contains more than five years of quality-assured water resource information of the basin. The data, obtained from 29 monitoring stations, are then screened utilizing methodologies and criteria approved by the Texas Natural Resource Conservation Commission (TNRCC). Data entered into the database are immediately available for use by the public via the Authority's website - www.rra.dst.tx.us/CRP, and assists local communities who are facing stricter permitting requirements to make informed decisions about their water resource management practices, based on good science.

The overall condition of the water resources within the basin are classified as good with respect to stream standards, and supports aquatic life and uses. High concentrations of salt in Lake Meredith continue to be a concern because it affects the use of Lake Meredith as a potable water supply. The Salinity Control Project, implemented to control the discharge from saline, artisian springs in New Mexico, should eventually result in a reduction of the salt load carried by the Canadian River. Current analyses demonstrate nutrient concentrations are supporting undesirable growths of algae or aquatic vegetation that produce adverse impacts on water uses in the Canadian River below Lake Meredith and Rita Blanca Lake due to naturally occurring phenomena. Metal concentrations were identified as a potential concern in some isolated areas. However, ongoing studies have been incorporated to accurately discern the plausibility of these analyses.

#2 - Find Feasible Solutions to Control Pollution

Feasible solutions will only be identified through continual strategic water quality monitoring and analysis. Water quality data collected in the Canadian Basin utilize quality assured protocols to provide vital information necessary for the development of appropriate water quality standards, the preparation of an inventory of water quality, development of a list of impaired waterbodies and appropriate wastewater discharge permits.

In 1999 the Authority initiated annual coordinated monitoring meetings with all monitoring entities within the basin. These coordinated meetings ensure coverage of the entire basin, avoid duplication of effort and allow the monitoring partners to share information. The coordinated collection, analysis and management of water quality data provide vital scientific solutions for maintaining the availability and quality of natural resources for all intended uses. Red River Authority of Texas, Canadian River Municipal Water Authority (CRMWA), U.S. Geological Survey and the TNRCC Regional Offices unitedly conduct water quality monitoring at key stations under the TNRCC approved Quality Assurance Project Plan (QAPP).

Since the Canadian River Basin is a part of Group A in the five-year planning cycle, the focus for FY 2000 is strategy development. Strategy development and/or a *watershed action plan* outlines the steps necessary to reduce pollutant loads in a certain body of water to restore and maintain human uses or aquatic life support. The development of TMDLs (Total Maximum Daily Loads) and watershed action plans is considered to be the best method to improve water quality. A TMDL is the maximum amount of a pollutant that a lake, river or stream can receive without seriously harming its beneficial uses.

TMDLs are designed for impaired waterbodies contained in the Clean Water Act's draft §303(d) list for 2000. The three waterbodies in the Canadian River Basin currently included on the §303(d) list are Dixon Creek, Rita Blanca Lake and Palo Duro Reservoir. Although these listings indicate a *low priority*, strategies necessary to improve their rating are significant components of the coordinated monitoring plan. TMDL development for waterbodies on the §303(d) list for this basin are scheduled for FY 2002.

The Lake Meredith Salinity Control Project continues as the paramount pollution control program in the basin. With the addition of Lake Meredith (Segments 102 and 103) on the Clean Water Act's §303(d) list, some believe additional funding may become available to enhance the removal of total dissolved solids from the Canadian River and Lake Meredith, thus improving its designated uses.

3 - Public Education and Involvement

A primary reason for the success of the Clean Rivers Program is its emphasis on *public participation and education.* Through this forum the people of the Canadian River Basin have been able to broaden their awareness of water quality conditions, utilize the knowledge and expertise of many, and work together to rectify identified problems. It has provided an opportunity for the regulating agencies to display a more favorable image. It has allowed the Authority, CRMWA, Palo Duro River Authority, cities, counties, industries, agriculture and the general public to meet on common ground and collectively resolve issues to secure a higher quality of life without the apprehension of earlier periods. It has given the people of the basin an opportunity to provide their experience and understanding of this area of the state to the people who *set the standards*, thereby qualifying the need for any change.

Public participation provides for effective watershed planning and management by ensuring that local concerns are accurately addressed and the people are well represented. The Authority relies upon the guidance and counsel of the Steering Committee to maintain focus on the programs that are consistent with the priorities and issues facing the local communities. Steering Committee Meetings, open to the public, were held in Amarillo and Wichita Falls, thus allowing the people to voice their concerns and learn more about the water quality and other natural resource issues within their basin. The consensus of these meetings indicated the programs initiated and the expenditure of resources to achieve compliance with the directives of the CRP are prudent. They agreed that additional data are needed to further evaluate the basin water quality trends and to develop effective action plans for the protection of water resources. Consequently, resources were directed toward maintaining key fixed stations for the collection of baseline data.

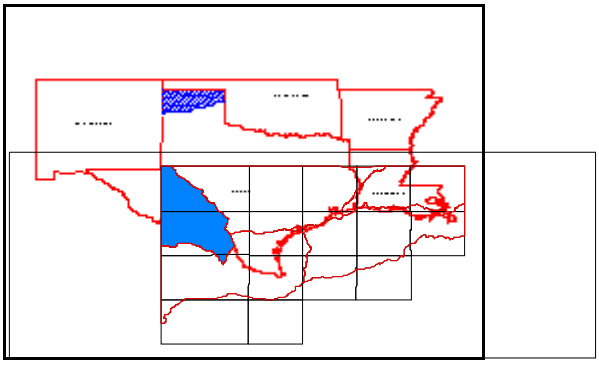
The Authority's web site contains a myriad of information easily accessible by anyone at www.rra.dst.tx.us/CRP. Educational programs for public and private schools are available from kindergarten to the high school level. Opportunities for internships with other resource agencies are available for students entering college. Additionally, presentations on several water resource subjects are available for interested entities and civic groups, all of which are sponsored by the CRP.

4 - Provide Administrative and Technical Assistance to Local Entities

During its 40 year history, the Authority's mission has been one of beneficial service to the public concerning water conservation, reclamation, protection and development of water resources. The Clean Rivers Program mirrors this goal and has allowed the Authority and TNRCC to use their expertise concurrently to assist the public. Through continuous critique by stakeholders and steering committees, the assistance that the CRP provides parallels the basin's needs. Coordination of permitting and provisions for quality assured data enable both the regulator and the regulated community to work together to find reasonable solutions toward improved management practices for protecting the water resources.

The development of a common QAPP is an example of local entities working together toward a common goal - quality assured data. The central clearinghouse for current inventories of water quality, water resource and socio-economic data related geographically is rapidly becoming a dependable resource for everyone.

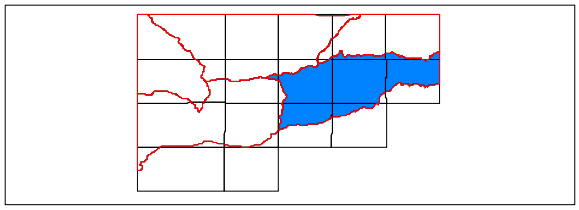
The Authority is committed to the people of the basin, as well as the goals of the Clean Rivers Program. Together we can achieve our ultimate goals, from the smallest community to the largest city.



FIVE REACHES OF THE CANADIAN RIVER BASIN

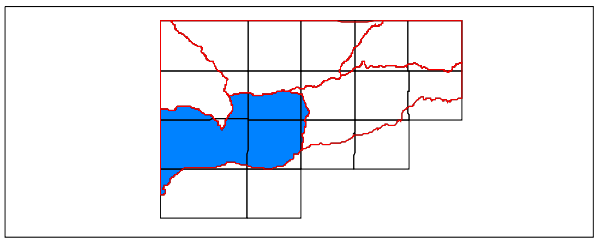
For the assessment to be comprehensive in nature and useful as a resource management tool, an analytical watershed approach was followed for proper identification and isolation of individual factors or elements having an influence on the quality of the water resources obtained from large geographical areas. Each primary area of study was hydrologically divided into five basin reaches containing approximately 4,500 square miles each.

Reach I - The Canadian River main stem watershed from the Texas-Oklahoma state-line upstream to the Sanford Dam on the Canadian River. (Hemphill/Lipscomb Counties to Hutchinson/Carson Counties)



There are two subwatersheds in this reach totaling 4,790 square miles of contributing drainage area in Texas and Oklahoma with 2,831 square miles in Texas. Five water quality monitoring stations had sufficient data for screening in this reach. There are 13 municipal and industrial permits with a total discharge of 16.1 MGD, 12 permitted solid waste disposal sites and ten water rights permits issued in this reach. The Authority conducted 66 monitoring events during this period and 3,710 parameters were screened and analyzed. Of the constituents screened, chloride, ammonia-nitrogen and chlorophyll-*a* were identified as parameters which exceeded the screening criteria. No significant trends were noted with respect to chloride concentrations. Because there is no water quality standard for ammonia-nitrogen or chlorophyll-*a,* it is recommended that further studies be conducted in Segment 101 to determine if the condition is a natural characteristic of the segment or resulting from animal feeding operations. Dixon Creek appears on the 303(d) list for fecal coliform and low DO. Further monitoring is recommended to determine if the causes are due to natural conditions or point source.

Reach II - The Canadian River main stem watershed from Sanford Dam upstream to the Texas-New Mexico state-line. (Moore/Potter Counties to Oldham/Hartley Counties)



Reach II contains two subwatersheds with 3,760 square miles of contributing drainage in Texas and New Mexico, 3,108 square miles are in Texas. There are 11 municipal and industrial permits with a total discharge of 19.4 MGD, six permitted solid waste disposal sites and 11 water rights permits issued in this reach. Twenty water quality monitoring stations had sufficient data for screening. The Authority conducted 41 monitoring events during this period and 1,606 parameters were screened and analyzed. Of the constituents screened, total dissolved solids, chloride, sulfate and fecal coliform were identified as parameters which warrant further study. A trend of decreasing concentrations of total dissolved solids and chlorides are shown in Segment 102. Segment 103 of the Canadian River exhibits high variable salt loads. Naturally occurring conditions can result in occasional elevated densities of fecal coliform. The CRMWA is requesting that Segment 102 be placed on the 303(d) list as water quality does not meet drinking water standards which is the segments primary use.

Reach III - Rita Blanca Creek watershed upstream to the Texas-New Mexico state-line on the west and the Texas-Oklahoma state-line on the north. (Hartley County to Dallam County)

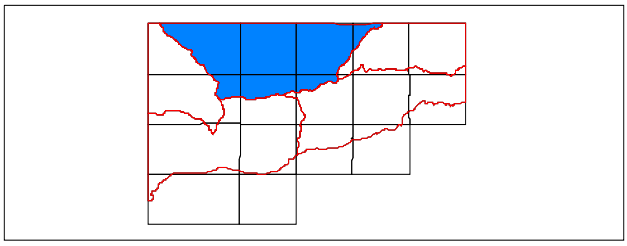
The three subwatersheds contained in Reach III have 3,554 square miles of contributing drainage in Texas, New Mexico and Oklahoma with 1,527 square miles in Texas. There is only one municipal permit with a total discharge of 0.03 MGD, three

permitted solid waste disposal sites and one water right permit issued in this reach. Two water quality monitoring stations had sufficient data for screening. Of the constituents screened, total dissolved solids, chloride, ammonia-nitrogen, phosphorus-total, chlorophyll-*a*, dissolved oxygen and pH were identified as parameters which warrant further study in Segment 105 and therefore, placing it on the 303(d) list. TDS and chloride concentrations in Rita Blanca Lake appear to be increasing and require further study to determine if the existing water quality standards are appropriate. No trends were observed with respect to ammonia-nitrogen, phosphorus-total or chlorophyll-*a*. The DO and pH data indicate that significant algal activity is present. Rita Blanca Lake is designated for use as a high quality water fowl habitat and does not have any freshwater sources. Rita Blanca Lake is more like a wetlands than a free waterbody. Therefore, consideration should be given to reclassification of the waterbody, adjusting the water quality standard to match its natural characteristics and removing it from the 303(d) list.

Reach IV - Palo Duro Creek watershed from the Texas-Oklahoma state-line upstream to its headwaters and portions of Coldwater Creek, Frisco Creek and Lower Beaver River located in Texas. (Ochiltree/Hutchinson Counties to Dallam Counties)

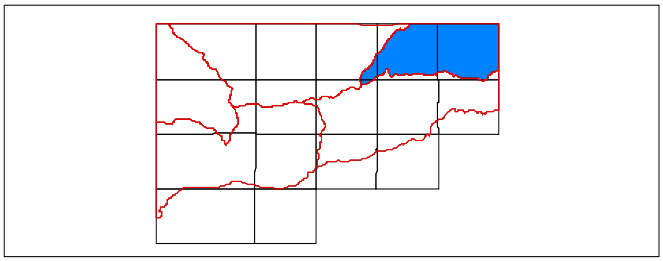
Reach IV also contains three subwatersheds with 6,520 square miles of contributing drainage in Texas, New Mexico and Oklahoma, with 3,448 square miles in Texas. One water quality monitoring station had sufficient data for screening. There are four municipal and industrial permits with a total discharge of 0.383 MGD, eight permitted solid waste disposal sites and 15 water rights permits issued in this reach. Due to the prevailing drought conditions and the lack of available water, no samples were collected in this reach with the exception of Palo Duro Reservoir, which is on the 303(d) list for occasional low dissolved oxygen levels. Increased DO monitoring is recommended.

Reach V - Wolf Creek, Mammoth Creek and Kiowa Creek watersheds from the Texas-Oklahoma state-line upstream to the headwaters of each. (Lipscomb County to Hansford County)



Reach V includes three subwatersheds with 3,589 square miles of contributing drainage in Texas and Oklahoma, with 1,617 square miles in Texas. One water quality monitoring station had sufficient data for screening. There are eight municipal and industrial permits with a total discharge of 4.3 MGD, six permitted solid waste disposal sites and three water rights permits issued in this reach. The Authority conducted 14 monitoring events and 628 parameters were screened and analyzed. No concerns were identified in this reach.

Additional information and details of the screening analysis results are available on the Authority's website at www.rra.dst.tx.us/Publications/CRP or a copy of the Basin Summary Report can be obtained by contacting the office at (940)723-0855.



All parameters screened utilized the State's Surface Water Quality Monitoring Standards, and, as such, do not reflect drinking water standards.